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ABSTRACT

Competency Based Teacher Education (CBTE) is examined as a means of providing a systematic approach to handling educational complexity which will lead to modernizing teacher education. Analysis and discussion are offered on: (1) what CBTE consists of and how it functions; (2) CBTE as an educational reform movement in the United States; (3) societal changes underlying the development of the CBTE concepts; (4) use of the systems analysis approach as a fundamental process for CBTE curriculum development; (5) knowledge, performance, and product criteria used in CBTE assessment; (6) basic elements comprising CBTE instructional modules; (7) personalization and individualization of CBTE programs; (8) CBTE as a continuing learning process for inservice teachers; (9) systematic evaluation of CBTE programs; (10) the CBTE program developed at the University of Toledo; (11) competency statements on planning, teaching materials, instructional techniques, communication with learners, learning reinforcement, and professional standards; (12) changes in the faculty role in a CBTE program; and (13) the use of CBTE in an international setting. (JD)

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Competency-Based Teacher Education (C.B.T.E.): A basic strategy to educational Improvement WorldWide.

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COMPETENCY - BASED TEACHER EDUCATION (C.B.T.E.) A Basic Strategy To Educational Improvement Worldwide

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INTRODUCTION:

When all educational factors are thoroughly considered, the most basic element about "basic education in the real world" is the quality of the teacher and teaching involved. Nothing can be more inhibiting to pupil learning than an incompetent teacher and inadequate teaching ability. Most discussions and actions about good, basic education are limited to changes in the curriculum, the improvement of teaching text-books and materials, the use of modern educational technology and media, and the provision of pleassant, conducive physical surroundings for the learning process. It is also absolutely necessary to have expert, competent classroom teachers. However, the supplying of such individuals in the "real world" is fundamentally based on assuming that any person experiencing a program of teacher education and/or holding an academic degree will be able to teach children in the classroom with some degree of professional and academic success.[1] There never has been much of anything

developed in the way of evidence to support this belief; the obvious is accepted and let go at that. This situation, unfortunately, leaves the most important ingredient of successful basic education to chance.

The establishment of the competency-based teacher education (CBTE) movement and general educational accountability concerns in education have put a considerable focus on teacher performance and competency. What teacher educators used to take for granted about successful teacher behavior and resultant pupil outcomes is no longer accepted unqestioningly. Dr. Donald Medley, a prominent American researcher on teacher effectiveness has said, "Only when we know why a teacher is effective-as well as how-can we decide how best to train teachers. "Medley has made the situation quite clear.[2] It is one thing to develop programs to prepare, supposedly, competent teachers, but it is quite another matter to determine if the products of these programs are indeed competent professionals and effective in the probable cause and effect relationship between teacher behaviour and pupil behavior and learning.

The College of Education at the University of Toledo has long been interested in the development of teacher competency as well as the necessary research/evaluation effort to determine if teacher preparation efforts result in a teacher product truly well educated for and able in a classroom situation. The College of education first designed and then implemented a program of teacher education called Competency Based Teacher Education to provide the teacher training which would result in the development of well qualified, excellent teachers. A corollary aspect of the effort to address teacher effectiveness was the creation of a research/evaluation program to learn if the products produced by the new teacher education curriculum were indeed competent and effective in the classroom.[3] Both of these matters will be discussed in this paper.

Having been associated with what is commonly known as competency or performance-based teacher education for the past ten years, we submit

that this educational concept and program is a type of change strategy which can go far toward providing a systematic approach to handling educational complexity and which will be more than a haphazard attempt to modernize teacher education. We will provide a brief explanation of Competency-Based Teacher Education.

Definition of CBTE:

The strategy involved in the development of competency-based programs is that outcomes expected to be derived from such programs are clearly specified. Operationally, this means that the knowledge, skills, attitudes, sensitivities, competencies, and so on, that prospective teachers are expected to have upon completion of a teacher education program are specified and the indicators which are acceptable as evidence for the realization of these outcomes are made known. This type of teacher training is called Competency-Based Teacher Education. Such efforts simply mean that the competencies to be acquired by the student and the criteria to be applied in assessing the competency of a student are made explicit and the student is held accountable for meeting these criteria. The teacher competencies to be specified are teacher understandings, skills, attitudes and behaviours that facilitate the intellectual, social, emotional and physical growth of children.[4]

CBTE programs commit those involved to the use of competency-based criteria for teacher preparation. These competency-based criteria will hold students, and ultimately teachers, accountable for their realization and such realization is based on acquired knowledge, demonstrated performance,and predictable products. The idea is that only when a prospective teacher has the appropriate knowledge, can perform in a stipulated manner, and can produce anticipated results with learners will he meet competency-based requirements. Such criteria demand the use of behavioral objectives as a form for stating outcome expectancies. There must be reasonably precise statements of the specific competencies to be achieved and there must also be reliable procedures for

assessing competence in terms of the appropriate criteria developed. Obviously, decisions on what behavior and what products are to serve as a criteria base must be made in collaboration with appropriate agencies or persons who act together to specify appropriate knowledge, behaviors, or product outcomes. Competency-Based Teacher Education programs have developed the instructional format termed a module or behaviorally designed curriculum unit, to increase possibilities for self-pacing, individualization, personalization and other means of instruction.[5]

The CBTE trend in teacher education is obviously toward a stronger emphasis on performance and product. An increasing number of people in the teaching profession have become unwilling to accept the assumption that simply because someone "knows" something he can necessarily apply his knowledge. We are becoming increasingly uncomfortable with the magnitude of inference between "knowing" and "doing", and the time has come to ask prospective teachers for the evidence of what is expected of them as well as that which is specified for them. Knowing and the ability to apply what is known are two very different matters.

Reform in Teacher Education - The Case of The United States:

Most teacher education programs today operate without any prior comprehensive conceptualization from useful research findings and societal concerns. Very few are built on assumptions about the role of the learner, the changing role of the teacher in a changing society, and the kinds of skills and attitudes that a teacher needs in order to continue to grow as a teacher and as a person. The conceptualization of most programs today is in terms of the particular courses needed to meet someone's standards or, in the United States, teacher certification requirements.[6] Most programs are designed without a research or theoretical base. Major break-throughs have been made in teacher education research concerning the analysis of teaching behavior and the conception of such behavior as a complex of skills that can be identified and practiced systematically under specifiable conditions. A number of innovations, such as micro-teaching, interaction analysis, simulation, and team teaching,

have been introduced into teacher preparation programs but they have been used in an appended, piecemeal fashion. While such innovations offer program potential, the net result is that despite their addition, the total program does not change significantly. Innovation in teacher education should be viewed as an interrelated portion of a complete program. Innovative program components need consideration in terms of the total system and how the goals of that system are to be achieved.

There is really no longer any way to hide from the forces which are pushing and pulling the teacher education profession toward drastic change. Using the United States as an example. We can report that there is a serious breakdown in the desire and ability of Americans to support education adequately at all levels. This attitude is causing a definite reconsideration of what shall be taught and how it will be offered to learners as well as the extent to which a public is willing to fund education professionals who fail to address themselves adequately to the educational problems of the day. Accountability in education has become a national policy. Educators are being forced to accept responsibility for their performance and the performance of their products. Various strategies are being developed to provide a frustrated public with evidence that contract with school patrons involves more than simply showing up for work on time and putting in a minimum number of hours. Performance contracting is an example of one of these strategies.[7] It is evident that the public education system of the United States has certain weaknesses and is unable to do what it has been commissioned to do for large segments of the population. Witness the national concern over persons from culturally different backgrounds who find it difficult to learn in present schools with present teachers. Americans have too many children with reading difficulties; there is a lack of vocational preparation for many youth; there are vain attempts to cope with "in-school dropouts". School officials are becoming increasingly concerned with the inability of beginning teachers to meet fully the expectations of the school district and find a pressing need to provide more "on-the-job

training" for new teachers. Pre-service and in-service teacher education students charge that teacher education programs lack "relevance" to the current social and educational scene. Added to all of this in the United States is the growing demand by the teaching profession for a greater voice in matters of teacher program planning and certification. The general desire is clear for increasing self-regulation within the teaching profession. Finally, they are faced with an over-supply of individuals holding qualified teaching certificates, but they have a distinct under-supply of real teaching ability. The teacher shortage in the United States has been met physically but not in terms of quality.

The point being made is that the demands of society and current educational change efforts have triggered confusion, uncertainty, self-analysis, as well as excitement and hopefulness in terms of the options available to teacher educators as they seek new directions. As Americans react to the sweeping social and educational changes confronting them, two broad strategies for the design and operation of teacher education programs are available and in competition. H. Del Schalock of the Teaching Research Division of the Oregon State System of Higher Education, has identified them as the Experience-Based strategy and the Performance-Based strategy.[8]

The first strategy is descriptive of most teacher education programs in operation today. The experience-based teacher education program by and large involves a specified number of courses and course hours in specific areas of study plus a student teaching requirement. The standards of teacher education accrediting adopted by the National Council for the Accreditation of Teacher Education in 1970 express this concept[9] quite well by recommending (1) course work in the area of general studies, (2) content of the teaching specialty, (3) humanistic and behavioral studies (4) teaching and learning theory with laboratory and clinical experience, and (5) a "practicum" experience. Such specifications are simply classes of experience in which prospective teachers are to engage. They do not specify what is to be taken from such experience nor do they indicate what prospective teachers need to know or to be able to accomplish

in order to become qualified to teach. Programs designed on this basis are not performance-based unless one considers that maintaining specific grade-point averages in the courses taken is evidence of teacher competency or success. This approach to teacher education has consistently been found wanting in the past and continues to do little toward meeting present and future educational challenges.

The answer to real change in teacher education is the strategy involved in the development of performance-based programs where the outcomes expected to be derived from such programs are clearly specified. Operationally, this means that the knowledge, skills, attitudes, sensitivities, and competencies, that prospective teachers are expected to have upon completion of a teacher education program are specified and the indicators which are acceptable as evidence for the realization of these outcomes are made known. We classify this type of teacher training as performance or competency-based teacher education. such reference simply means that the competencies to be acquired by the student and the criteria to be applied in assessing the competency of the student are made explicit, and the student is held accountable for meeting these criteria. The teacher competencies to be specified are those involved in the particular teacher skills, understandings, attitudes and behaviors that facilitate the intellectual, social, emotional and physical growth of children.[10] Three types of criteria are used in determining the competencies of the teacher. Knowledge criteria, performance criteria and product criteria. Knowledge criteria are used to gauge his cognitive understandings. Performance criteria are employed to assess his teaching behaviors. Product criteria are used to assess his ability to teach including an examination of the achievement of pupils he has taught.

The trend today in American teacher education is obviously toward a stronger emphasis on performance and product. An increasing number of people in the teaching profession are becoming unwilling to accept the assumption that simply because someone "knows" something he can

necessarily apply his knowledge. Educators are becoming increasingly uncomfortable with the magnitude of inference between "knowing" and "doing" and the time has come to ask prospective teachers for the evidence of what is expected of them as well as that which is specified for them. No longer can teacher education programs give greatest weight to the teacher's knowledge. Knowing and the ability to apply what is known are two very different matters.

The major and most far reaching effort in the United States to accommodate the foregoing points of view has been the Model Elementary Teacher Education Programs sponsored by the United States Office of Education. Nine of these developmental research programs were funded in a Phase I design effort. An additional program was added during the Phase II feasibility studies which looked into the matter of program design time and cost factors. These ten model teacher education programs,[11] which run to over two million words of research reports, are major contributions to teacher education and educators everywhere. These model designs and the subsequent, cooperative work of the model directors and their colleagues, from 1967 to the present, have formed the base and real substance of what is known as competency-based teacher education.

CBTE-A Response to the Concern for Teacher Effectiveness:

The College of Education at The University of Toledo established a comprehensive competency-based teacher education program design in 1968. By 1973, Option 4 of that design was fully implemented for the basic elementary teacher education program. Further, a secondary CBTE program was developed and became operative as an outgrowth of elementary CBTE efforts. The implemented programs synthesized a considerable amount of knowledge about society, the learning process, teacher methodology, educational technology, instructional organization, and educational research. To understand briefly what occurred, some

fundamental knowledge of CBTE is necessary, as well as a summary of The University of Toledo CBTE program.[12]

Competency-based teacher education (CBTE) is a type of teacher training that focuses on the student's acquisition of specific teaching competencies. Competencies, or the knowledge, skills, attitudes, and values that prospective teachers are expected to have on completion of a teacher education program, are specified as a set of learning objectives. These objectives are stated behaviorally or in such form that their achievement can be produced and observed as learner behavior and knowledge. With such objectives are established the minimum levels for their achievement, indications of the standards or "criteria" of successful attainment. The instructional program is delivered through modules where the teacher competencies are specified through the use of behavioral objectives, learning activities are suggested for the objectives specified which will help the student achieve a minimal level of competence, and evaluations of student performance and knowledge determines whether the criteria of successful achievement of the objective(s) are achieved.

The major features of CBTE are: a systems approach to teacher education; the use of behavioral objectives; the use of instructional modules or modularized learning experiences; a concern for competency-based criteria; personalized and individualized instructional strategies, an emphasis of field experiences; and, a method of systematic evaluation of both the student and the program.

I- CBTE-A Systems Analysis Approach:

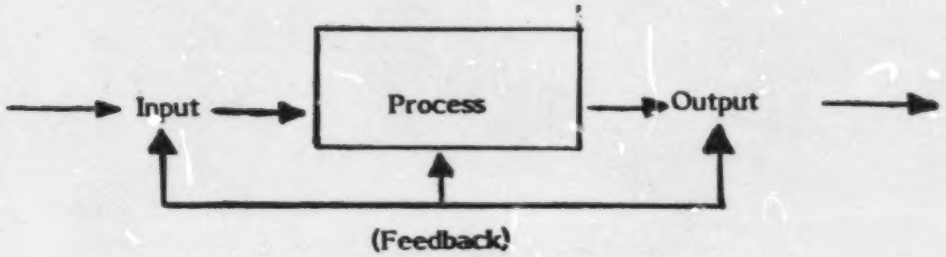
The fundamental process for competency-based teacher education curriculum development research is the systems analysis approach. Systems analysis is a general term for the process of applying scientific thinking to large scale problems. The use of this concept in teacher education must be thought of as indicating a concentration on process. We have

thought of teacher education as a system[13] because (1) the role of the teacher must be designed (and his education developed) in the context of various related educational roles (such as teacher aides, educational technologists, various supervisory personnel, etc.); (2) the role of the teacher must be considered in relationship to all the elements of the learning environment (such as books, theories of teaching, equipment, etc.); (3) the distinction between pre-service and in-service training is eliminated and teaching is more and more viewed as a continuing, developmental process; and (4) the education of teachers has become goal-oriented based on the development of competencies required of the teacher in order to facilitate children's learning.

With this rationale in mind, a teacher education system has as its purpose the development of teachers who possess certain knowledge, skills, and attitudes which will facilitate the learning process for children. Its processes are the readings, discussions and experiences that a teacher undergoes as he attempts to achieve the necessary knowledge, skills, and attitudes. Its components are the managerial and instructional units (courses, learning modules, scheduling unit) necessary to organize and monitor the processes designed to achieve the program's purposes. And the products of the system are the teachers who graduate from the teacher education program so conceived. The measure of the system's success is whether or not such teachers possess the knowledge, skills, and attitudes, which the program had as its goals. Evaluation is necessary to ascertain the degree to which this occurs. The information obtained from such evaluation is then fed back into the system in order to make any necessary alterations to the purposes, processes, or components of the entire program. As corrections are made, the whole cycle is repeated again and the process is obviously ongoing and regenerative.

A simple way of looking at systems is to view the entire procedure as one of input, process or operation, output, and feedback. The relationship among these components can be shown in a simple diagram which

indicates that feedback from output goes to both the process and input components.



The purpose of the system is realized through processes in which interacting components of the system engage in order to produce a pre-determined output. Purpose determines the process required and the process will imply the kinds of components that will make up the system. Thus, the systems approach forces a total consideration of teacher education-its objectives, its means, its sub-systems and their relationship to each other.

The model builders, using a systems approach, began with a conceptualization of the total educational program including its needs and broad objectives, considered the potential components of such a program, stated the specific objectives for each component and then designed the instructional procedures, called modules, to achieve the objectives. The analytical process of the systems approach demanded a consideration of teachers from a product-oriented perspective accompanied by reference to educational theory and research on teacher effectiveness and the learning process. Systems theory called for precise development of goals and objectives,because the design of all processes and components in the system was dependent upon objectives which clearly stated the criteria by which the system's effectiveness was to be judged. Putting it simply, you must know what you are trying to do or there is no way of finding out if you have done it. The systems approach forced the designers to look at educational innovations and new practices in respect to their relationship to specific program goals and objectives. Educational

innovations were not added to the program design indiscriminately. The systems approach required that the components of the program be derived directly from the objectives or else the program's achievement was not to be facilitated.

The basic concepts and thinking behind the systems approach arenot new nor mystical. Rather, the approach is a logical and analytical process that rests on common sense. It does require some new vocabulary and a new way of approaching the design of a teacher education program, but unless we really understand the system called "teacher education" and its relationship to the whole of education, we cannot justify our current practices nor recommend promising changes.

2- Competency-Based Criteria:

The basic point of view about the competency-based approach assumes the use of the prior stated kinds of assessment criteria-knowledge criteria, performance criteria, and product criteria. Traditionally, teacher preparation programs have been concerned primarily with knowledge criteria for the assessment of objectives. Almost without exception such competencies are stated in terms of courses required and evidence that time has been served, including some form of student teaching. This lack of clearly defined outcomes hampers teacher education processes. Even when sufficient time for student teaching is provided, the lack of specific performance expectancies makes it impossible to measure the effects of training on the performance or the student's readiness to enter the teaching profession. Emphasis is now shifting to assessment procedures which emphasize performance criteria and such criteria should be as rigorous, systematically derived, and explicitly stated as the criteria for assessing knowledge. The ability to attain specified objectives with learners (or products) represents another kind of competence which will be required of a teacher candidate. Such assessments of knowledge (what a prospective teacher knows), performance (what a prospective teacher can do), and products (what a prospective teacher can achieve

in learners), can be made and described systematically. Only when a prospective teacher has the appropriate knowledge, can perform in a stipulated manner and can produce anticipated results with learners, will he meet competency-based requirements.

Regardless of the basis for assessing competence, two general conditions must be met if competency-based teacher preparation programs are to be a reality. First,there must be reasonably precise statements of the specific competencies to be achieved. Second, there must also be reliable procedures for assessing competence in terms of the appropriate criteria developed. These two conditions require some procedural conditions which must be observed. Decisions on what behavior and what products are to serve as a criteria base must be made in collaboration with appropriate agencies or persons who act together to specify appropriate knowledge, behaviors, or product outcomes. Thus, the teacher education institution is no longer the major determinant of program focus or requirements. All aspects of education must become a part of the act in determining a basis for competence assessment. Another important procedural condition is the use of behavorial objectives as a form for stating outcome expectancies. The need for behavioral objectives grows with the conviction that desired educational outcomes can be specified and measured with reasonable precision. These institutional objectives will specify the behaviors to be acquired by the student and will include understandings, attitudes, and skills. Expressive objectives may also be indicated which will specify events to be experienced by the student without any prescription or prediction of possible outcomes.[14]

In a competency-based teacher education program achievement is held constant and time varies. In present teacher education programs time is held constant while achievement varies. Competency-based programs put their greatest emphasis with students on exit, not entrance, requirements. Traditional programs put the greatest emphasis on entrance

requirements. It appears much more germane to examine an individual's abilities after completion of a program rather than before he has entered it.

3- CBTE-Instructional Modules:

At the heart of a competency-based teacher education program is the instructional module. An instructional module may be defined as a set of learning activities intended to facilitate the student's achievement of a specific objective or set of objectives. In its simplest terms the module consists of the following elements: (1) A specific objective or set of objectives in behavioral terms; (2) A pre-test designed to assess the student's level of achievement relative to the objective or objectives prior to the experience; (3) A series of instructional activities designed to help the student meet the objective or objectives; (4) A post-test designed to assess the student's level of mastery relative to the objective or objectives.[15]

Certain facts about the various elements of a module are worthy of emphasis. The objective or objectives are made public and are based on competencies which are reality-based. The pre-test provides the student with an opportunity to demonstrate competencies he already possesses with the option to by-pass the instructional activities relative to those competencies that he can demonstrate. Both the pre-test and post-test are reality-oriented; therefore, performance and product criteria are generally utilized to assess student progress. And most importantly, module use increases possibilities for self-pacing, individualization, personalization, independent study and other means of instruction, all of which are obvious advantages.[16]

4- CBTE-Personalization and Individualization:

Competency-based teacher education programs are sometimes criticized as being non-humanistic. For such programs to be both relevant and humanistic they must be personalized and the concept of "personalization" requires both face-to-face personal contacts and a variety of strategies which individualize the instruction-learning process. The term personalization is intended to convey a meaning beyond that implied by the words individualization of instruction. Individualization refers generally to the provision of opportunities for students to engage in learning activities independent from other learners. It can be accomplished in many ways but although instruction can be individualized this does not assure a humanistic learning environment. Personalization of instruction, on the other hand, attempts to avoid the de-humanization of instruction.[17]

Personalization requires that students have a direct impact on the design, development and operational implementation of the program in which they are participating. It calls for learners to help determine the nature of their learning experience. This ultimately means that each student's program will vary to some extent on the basis of his interest, specialization, background of knowledge, skills, and his personal learning style. There has to be a continuing relationship between the college faculty and the student throughout the student's stay in the program. The student is expected to interact continuously with his faculty sponsors so that the competencies to be developed by the student, the context in which such competencies will be demonstrated, and the criteria by which they will be judged, will be defined and negotiated.

The fundamental idea behind personalization is that students will know exactly what they want to do and what they can do. Then they are held accountable for demonstrating the competencies they have defined and agreed upon achieving. Assessment procedures are considerably

modified from what they have been in most teacher education programs. Instead of assessment being "norm referenced", it becomes "criterion referenced" in terms of the three previously mentioned classes of criteria-knowledge, skills and products. Seeking the products of a teacher's behavior to assess competency will mean that competence is always situation specific and cannot be thought of as abstract or generic. Situation specific competence must always be demonstrated in real life settings. This results in the development of teachers with markedly different "styles" of teaching who can produce predictable outcomes. if we can engage prospective teachers in an education that is data-dependent and personalized where they themselves become independent, self-directing learners, we think that they will be able to create a similar learning environment for the children they teach.

5- CBTE-Other Factors for Strategy:

Competency-based teacher education calls for continuity or the joining together of pre-service and in-service teacher training.[18] We assume that a teacher is never fully educated and his intellectual and practical development is a continuous matter which must be nourished regularly. Consequently, the concept of a fixed three or four year program for teacher education is discarded, and concentration is provided on a more balanced and integrated approach to continuous teacher growth. The competency-based curriculum is deliberately designed for growth with respect to given knowledge, teaching performances and student outcomes because possible hierarchies of learning from the simple to the complex in the various content and skill areas are made more explicit. Competency-based design strategy calls for timely delivery of instruction at the time the teacher needs it, not just during vacations, weekends, after hour sessions, or in informal instructional classrooms. The attempt is made to make education as explicit and as public as possible with alternative objectives and instructional routes from which the next steps of growth can be selected. Finally, this curriculum approach includes

the technology which enables the various partners in the teacher education enterprise to maintain anticipatory design activities which permits the program to continue delivering instruction based on changing needs. Under these conditions continuity in teacher education is a necessity, not something to be possibly considered.

Multi-instructional organizational patterns and inter-disciplinary study are prominent in competency-based teacher education. Multi-institutional organizational patterns[19] refers to the fact that teacher education must be the business of not just colleges but also public schools, involved educational and governmental agencies, educational industries, educational professional organizations, teacher education students, and the community where teacher education activity takes place. Such a conception greatly extends the cooperative base for teacher education planning and operations. The objective is to maximize the resources available to teacher education programs and to involve more closely, directly, those concerned in the dicision making processes related to teacher education. Various kinds of partnership relationships can be developed with the use of consortia becoming a more predominant pattern of organization in providing teacher education programs. Teacher Education is coming of age as a behavioral science. The end of this century will see teacher education programs developed and conducted on the basis of empirical knowledge about learning and the conditions best suited to effect it. This will necessitate an inter-disciplinary approach in teacher education because the behavioral science are inter-disciplinary by nature. Teaching tasks call upon such a range of sensitivities, information, and skills, that only an inter-disciplinary approach to teacher training is conceivable. The team approach to studying human behavior must be replaced with a system where academicians and professionals can work together as true colleagues. It is interesting to note that on many college campuses today the growing edge in any research or developmental process is not in the traditional departments, but rather in centers, institutes, bureaus, or laboratories where scholars of vasrious persuasions and disciplines combine their talents to solve

a set of problems or a common problem. Cross-fertilization seems the key to the matter and the better way.

6. CBTE - A Method of Systematic Evaluation:

Education today is suffering because of a lack of systematic evaluation in teacher education. It is one thing to plan a course of training for teachers but is quite another to determine how future teachers will behave once they take full responsibility for their own classrooms. Competency-based teacher education focuses unusual attention on evaluation.[20] If such programs are to be effective in realizing their objectives, it is essential that modern systems technology be employed in their management and evaluation. The basic concept underlying this idea is the validity of a systematic procedure in dealing with planning operations. We must begin with a clear understanding of what is to result from our efforts, make detailed plans to achieve these objectives, and then put our plans into effect while constantly evaluating and revising as better means are found to achieve the objectives. A program so arranged in behavorial terms can be evaluated at any given point and time, and provisions for prompt and objective feedback will enable it to become self-correcting. Regretfully, present teacher education programs have not required the collection, sorting and frequent retrieval of large amounts of data for evaluative purposes. Increased attention to evaluation using systems management procedures calls for in-service staff training as well as the collection and use of an increasing number of specialists such as program systems analysts, computer programmers, media specialists, systems technicians, counselors and accountants. The all but neglected areas of program evaluation and management in teacher education require far greater attention than has ever been the case in the past.

The foregiong information has provided a general indication of what is involved in competency-based teacher education. Undoubtedly there are many questions, most prominent of which would be, "What

does this mean for me if such a program were to be developed at my institution ?" To try to clarify the concepts just provided and to answer the question just posed, this paper will be concluded by, first, unfolding the process thast The University of Toledo Model designers utilized in developing their competency-based teacher education program and, second, indicating the potential changes in faculty roles which will accl rue from such a program.

First - <u>The University of Toledo's CBTE Program:</u>

Within their teacher education universe, the Toledo planners attempted to deal appropriately with all of the sub-systems of the larger system. They called these subsystems target populations. The target populations were the pre-service students preparing to teach in preschools, kindergartens and elementary schools; in-service teachers; administrative personnel in public schools; college and university personnel associated with teacher education programs; and supportive personnel such as teacher aides and various other types of paraprofessionals. We assumed that if we were to have any success in changing teacher education the new program must deal with all of these target populations and all would be involved in training or retraining process.

Our basic process for the project [21] required an analysis of the general goals from the perspective of the teaching-learning process, educational technology, social factors, research, and instructional organization. These contexts, in our opinion, represented the mo e important sources of change in teacher education today. Each context was broken down into major subject areas which were furhter divided into topics. Behavorial objectives were then prepared for each of the six target populations utilizing each topic within each of the five contexts. These behavorial objectives were next armed with the details necessary for their implementation by specifying the procedures, materials, and evaluation processes to be used to achieve the objective or objectives. We called the results of this effort, Educational Specifications. A collection of these specifications or an elaboration of any one provides

an instructional module. This effort finally produced 876 usable specifications which incorporated over 2,000 behavorial objectives. Educational specifications and / or instructional modules were then organized into potential teacher education programs for each target population and also for limited, special purpose programs which are possible with our Model.

The above description is simplified but it incorporates all of the principles involved in developing a competency-based teacher education program including the designing of the evaluation component. Because we sincerely desired to address ourselves to change in teacher education, we stated that all groups of educational personnel who are in any way activity involved in the education, induction and support of new teachers must be subject to training or retraining. Further, we believed that any new challenging teacher education model program should also result in corresponding changes and innovations in the elementary school setting where the model is to be applied and its products placed. Thus, we abandoned the concept of teacher preparation for the elementary, selfcontained classroom and graded school and incorporated the idea of the multiunit school and team-teaching concept developed by the Wisconsin Research and Development Center for Cognitive Learning, an elementary school model which is now a national thrust and policy.[22] Our model efforts were not limited to traditional group activities but involved individually guided education and a program of individualization and personalization. We felt that the elementary school teacher should not be prepared exclusively as a generalist but have specialization in one of the four basic fields of teaching competene: language arts (reading), social studies, mathematics and science. We thought that a very decided instructional effort must be made to train teachers in terms of understanding and using the inventions of modern educational technology. We thought that teacher education programs could not rely only on child development points of view but should also incorporate some concern for the outcome, behavior and overtoperational procedures by which specific behaviors can be

elicited. We strongly believed and built into our program a keen awareness for cultural and social factors. We realized that research in teacher education could not be blithely ignored for the time has come for teachers to become classroom researchers and to be far more adept than they now are in assessing and evaluating teacher behavior and style. We advocated a teacher education program that would be a combination approach of work and study, practicum and experience, and content and training. College course work was always accompanied by field experience and public school classrooms became the physical facility for teacher education courses. Continuous cooperative and coordinated teacher education efforts with all segments of the community was emphasized. Finally, we assumed that a teacher education program was continuing and that the four year structure was simply a starting point not a conclusion. Our attitude about our Model is that it constitutes an exemplary program but not an ideal. It provides a broad general direction not a highly specific, narrow treatment. We think the Model can stand as it is. But as we implement it, we are constantly making changes as we try one strategy or another. This is consistent with our overall philosophy that our original specifications were not "forever," the last word in teacher training. We think we have created a Model which is self-renewing and constantly "becoming" a better program.

The CBTE program at The University of Toledo is a single, comprehensive effort to bring about educational change in the way elementary and secondary teachers are prepared, as well as educational change in schools where these teachers will likely teach. Such ideas require certain things of the teacher training process. The program is field- based (related to the real world of teaching in classrooms) to bring reality to teacher preparation. The broad goals of education are clear and firm so that the accomplishment of program goals and the behavioral objectives derived from them can be demonstrated. The program of teacher training specifies the knowledge, skills, attitudes and values (competencies) needed by teachers. The

program provides alternative means and varying lengths of time for reaching such competencies but all trainees meet a number of common educational objectives. The attempt is made to create a teacher training curriculum for teachers and schools which meets the individual differences of learners through individualizing the instructional process. The program incorporates the educational innovations of competency-based education, and individually-guided education.

The Toledo CBTE porgram has ten basic goals of teacher education which are behaviorally stated and cover the basic tenets of the American educational system. Each of these goals begins with the phrase, "Each teacher should be prepared to employ teacher behaviors which will help every child, etc".

The ten goals were examined in relation to five contexts which represented conditions of major importance to teacher education. The contexts were: instructional organization, educational technology, contemporary learning-teaching process, societal factors, and research. The use of these contexts enabled a breakdown of the basic goals into various subjects and topics for more detailed behavioral objectives.

Behavioral objectives were prepared for each of the five contexts, and these were stated in terms of specific student/pupil behavior(s) which can be observed and measured. The behavioral objectives contained and expressed the basic competencies required of competent teachers.

Instructional modules were then developed which incorporated the behavioral objectives. A module is a short course or topic outline covering anywhere from an hour to several weeks of instruction and consists of a behavioral objectives(s), a rationale to explain the signifcance of what is to be learned, suggested intructional activities, materials

to be used, and evaluation procedures. After being identified and created, modules are reviewed and sequenced in the usual course structure common to American higher education. The number of modules placed in a course depends upon the average number that can be completed by students in an instructional quarter of ten weeks.

Space does not allow a complete description of all components of the CBTE program.[23] However, it must be noted that the CBTE program established over fifteen years ago at The University of Toledo, while having matured and enjoyed considerable success, has constantly been subject to change.

The University of Toledo program developers and operators knew that the basic idea of CBTE requried concern and action for empirical student and program evaluation based on competency attainment. Once the necessary teaching competencies are identified for any teacher education program, teacher education students in teaching situations can be measured on the extent and proficiency of their teaching performance as that behavior reflects the program competencies considered. Such teacher effectiveness research in undergraduate teacher education is possible, although complex, and it must be attempted.

Research on teacher competence, teacher performance, and teacher effectiveness has been productive in the decade of the 1970's. Researchers are now concluding that a research data base for the content of teacher education has been developed and is substantial enough to provide direction for teacher education efforts. Jane Stallings, in a recent issue of "Educational Research," has perhaps expressed this point of view best:

> The research on teaching has been driven not so much by theory as by a curiosity about the nature of effective and ineffective teaching processes. In all cases, the

> researchers went to classrooms and observed what teachers and students were doing. They studied what was occurring in classrooms where students were making gains as well as where students were not making gains. Some of the studies used qualitative data, while others used quantitative data; some were contducted concurrently, others sequentially. The communication among those who conduct research on teaching tends to be frequent and constructive. As new studies are mapped, methodology and findings are compared to explore new frontiers of the teaching and learning territory. Thus, a body of knowledge regarding the management of time, tasks, and students is accumulating and can be useful in guiding the training of inservice and preservice teachers.[24]

Some useful distinctions have been made between the terms teacher effectiveness, teacher performance, and teacher competence. Teacher effectiveness is defined as the impact the teacher has on the pupils the teacher teaches. Teacher performance is defined in terms of the teaching behavior of the teacher on the job. Teacher competence is considered the repertoire of professional knowledges, professional skills, and professional value positions the teacher brings to the job.

There are five points[25] in teacher preparation and service where teacher assessment can occur to provide information on teacher competence, performance, and effectiveness.

The first assessment point concerns the characteristics that an individual brings to teacher preparation and these can be measured when a student first declares that he / she wishes to enter the teaching profession.

A second assessment situation occurs at the end of the teacher training experience in what is known as the student-teacher situation where teacher competence can be directly assessed at the culmination of teacher training experiences. A third assessment concerning teacher performance is an examiantion of actual teacher behavior on-the-job, the first and subsequent early years of inservice teaching. The influences which can affect such teacher performance are the preexisting teacher characteristics, previous teacher training experiences, and two additional factors which have not heretofore been involved - the situational context in which the teacher works and how the teacher feels about the job, teacher attitudes / motivation.

The fourth and fifth assessment points concern the measurement of teacher effectiveness or the evaluation of teachers, not strictly on the basis of their teaching behaviors, but rather on the learning experiences and educational outcomes of their pupils. Specifically, the fourth assessment assumes that teacher assessment is effected, directly or indirectly, by a variety of influences, only one of which is teacher performance. Such influences are pupil motivation and various contextual variables intrinsic to or impinging upon the learning situation. The fifth, final assessment of teacher effectiveness is the measurement of pupil knowledge, abiliteis, and/or attidues after instruction. Again, some of these outcomes are attributable to the teacher, but other variables are also present, including those in another contextual situation which interact with pupil learning experiences to determine how much a pupil will learn from such experiences.

The research effort going on at The University of Toledo to identify and measure teacher competencies is that occuring at the second assessment level. Information will now be presented to indicate how such assessment occurs and the results of such activity.

Two observational systems have been utilized: high inference observation and low inference observation. The high inference observation

system is that developed at the University of Georgia[26] for the State Department of Education in Georgia which requires the observer to make substantial inferences as to what competencies are being demonstrated and the quality of such demonstration. The behavior of the teacher is not recorded. An observer works from a stated set of indicators and descriptors for the competencies to be measured, and then makes a judgement as to how well teacher performance fits the indicators/descriptors. Such a system requires a good deal of observer judgment about what is occurring in the classroom. A scaled score of one to five is used with the indicators/descriptors and the scores derived for each competency are summed with a mean computed. The University of Georgia instrument called The Teacher Performance Assessment Instrument (TPAI) provides our institution with information on 45 of our basic 49 teacher education program competencies.

In contrast to high inference observation, low inference observation, utilizing the Classroom Observation Keyed for Research (COKER) instrument (this instrument was formerly called Georgia Assessment of Teacher Effectiveness, GATE) involves specific teacher/student behaviors which are defined with sufficient precision that observers will agree as to whether or not they have occured. The process of low-inference observation is one of recording behaviors that have been observed; no more,no less. Later, the incidence (or lack thereof) of individual behaviors are usually combined, according to some type of scoring algorithm, into scores on competencies. The scoring is objective, it can be done by a clerk or a computer, and no inferences are required in translating the observation into scores once the algorithm has been defined. The COKER instrument provides The University of Toledo information on 22 of its basic 49 program competencies. A listing of the competencies assessed may be of interest to readers.[27]

Competency Statements

Topic: Planning, Teaching Materials/Equipment, and Evaluation.

1- Plans units of instruction.
2- Plans instruction at a variety of cognitive levels.
3- Can state pupil outcomes and/or student course objectives in behavioral terms (behavioral objectives).
4- Has realistic expectations for the learning process and student readiness for learning.
5- Gathers, organizes, and evaluates pertinent information about students for effective instruction.
6- Identifies and evaluates learning problems of students in content area being taught.
7- Keeps informed of current professional/subject area literature and curricular learning materials/resources available.
8- Knows how to select (or construct), organize, and use appropriate instructional materials and equipment to facilitate learning activities.
9- Uses criteria and effective procedures for determining pupil achievement of learning objectives.
10- Selects/develops appropriate assessment techniques and isntruments for instructional activities.
11- Collects, quantifies, and interprets data from appropriate assessment instruments.
12- Maintains evaluation records.
13- Engages in professional development by obtaining and analyzing evaluative information concerning the effectiveness of instruction.
14- Uses information about the effectiveness of instruction to revise it, with possible curriculum modifications.
15- Relates to accountability issues concerning responsibilities to students, parents, and the instructional processes.

Topic: Instructional Strategies, Techniques, and/or Methods.

16- Uses a variety of instructional strategies.
17- Uses convergent and divergent inquiry strategies.
18- Develops and demonstrates problem-solving skills.
19- Establishes transitions and sequences in instruction which are varied.
20- Modifies instructional activities to accomodate identified learner needs.
21- Demonstrates ability to work with individuals, small groups, and large groups.
22- Structures the use of time to facilitate student learning.
23- Uses a variety of resources and materials.
24- Provides learning experiences which enable students to transfer principles and generalizations to situations outside of school.
25- Provides assignments/learning opportunities interesting and appropriate to different ability levels of pupils.
26- Demonstrates knowledge in the subject areas.
27- Demonstrates self direction and conveys the impression of knowing what to do and how to do it.
28- Works effectively as a member of an instructional team.
29- Uses acceptable written and oral expression with learners.
30- Adjusts components of the physical/learning environment over which the teacher has control to facilitate learning.

Topic: Communication with Learners.

31- Provides group communication (cooperation, interaction, learning from others) experiences for students.
32- Uses a variety of functional verbal and nonverbal communication skills with students.
33- Gives clear directions and explanations.
34- Motivates students to ask questions.

35- Uses questions that lead students to analyze, synthesize, and think critically.
36- Accepts varied student viewpoints and/or asks students to extend or elaborate answers or ideas.
37- Demonstrates proper listening skills.
38- Provides feedback to learners on their cognitive performance.
39- Expresses a positive personal attitude toward the teaching profession.

Topic: Learner Reinforcement-Involvement

40- Maintains an environment in which students are actively involved, working on-task.
41- Implements an effective classroom management system for positive student behavior (discipline).
42- Uses positive reinforcement patterns with students.
43- Assists students in dscovering and correcting errors and inaccuracies.
44- Develops student feedback, evaluation skills, and student self-evaluation.

Topic: Professional Standards

45- Accepts responsibility, is dependable.
46- Evidences cooperation with others (teachers, administrators, support staff, parents, etc.) in planning and teaching.
47- Acts as an appropriate model in terms of ethics, attitudes, and values.
48- Attends teacher and other professional meetings.
49- Understands and follows school law, and procedures and their effects on teachers, and teaching, including professional conduct standards.

Second - Changes in Faculty Roles.

Future faculty members will become increasingly more specialized and such specialization will take forms different from those of the

present. Present specialities such as curriculum specialist, educational psychologist, et cetera, are rather braodly defined and such persons are involved in many activities peripheral to this speciality. The philosophy of "everybody should be doing everything" is no longer tenable.

A type of specialization which we foresee emanating from competency-based teacher education developments will be the creation of the learning specialist.[28] This person will be involved with a behavioral approach to teacher education and will be proficient in such areas as the development of behavioral objectives, the organizing of educational modules, and the evaluation of educational outcomes. He will be a specialist in the learning-teaching process, and he will not be separated, in theory or in practice, from the real world of teaching. Another type of specialist will be the research and evaluation specialist. Competency-based teacher education programs will need individuals trained for roles in developmental research and evaulation. Such research will relate to the improvement of training programs and will be conducted within the context of an operating educational system. With emphasis being placed on evaluation of an empirical nature which is ongoing and supportive of decision making, a specialist in this type of activity will be certainly needed in the teacher education of the future.

Educational technology specialists will be necessary who will be able to instruct students in the methods of using educational technology and media and who can also work with teachers and other faculty to improve the effective implementation of their roles through the use of media. Instructional specialists will become necessary as teacher education programs shift decidedly from general information transmission to instructional guidance, demonstration and modeling. Individualized instruction and personalized attention in teacher education is difficult to visualize with a professor lecturing to a class of several hundred students. We will need specially trained faculty members

who are adept builders and organizers of learning activities and who with their students can become learners together. Such specialists will be required to use the products of modern technology in their professional activities. They must know how to individualize programs for students which involves continuous monitoring, assessment, and feedback. Such individuals will need to be more knowledgeable about elementary research procedures and principles and also be able to demonstrate their ability to apply such principles. Such professors, in cooperation with other personnel, will become increasingly responsible for program decisions and continued program development. With this responsibility comes a new dimension of accountability in the lives of professors. All of this will not negate present training and expertise in specific subject areas but much more must be added to the repertoire of the current professor than is presently the case.

We will also find that faculty members will be required to spend a majority of their time in the field where instruction with children takes place. This further means that the base of personnel considered teacher educators will be broadened. The university professor will be required to share his position as teacher educator with personnel from the public shcools and other educational agencies. They will all become functioning members of a new educational team on a new basis of parity. Presently, most faculty members can pursue their professional activities in relative isolation. When the individual is operationally a member of a professional team, the demand and even the motivation for excellence is much more acute. Working directly in a team context with one's colleague will increasingly become a characteristic of the faculty role. Such teams will be organized for the task to be done and not based on some status formula. The organization of teacher education faculties will be more along process lines than traditional subject or professional areas. With this will come the demise of some old loyalties and the emergence of new identifications for the teacher education professor.

Will all of this result in the teacher educator becoming the alien in his university setting ? Will faculty roles in teacher education be incompatible with faculty roles in other portions of the university so that teacher educators will be even more isolated than is presently the case ? On the contrary, we feel that such new roles suggested for teachers of teachers are more compatible with current university directions and developments in higher education. Using the concept of shared responsibility for teaching and learning should create more self-motivation on the part of learners and teachers and a different kind of unit in terms of place and purpose.

The changing faculty role implies a major task of faculty re-education, with all its content, procedure and logistical detail. Such a faculty member should become the change agent of future teacher education process and progress. The faculty make the real difference in all design and development efforts because such efforts require faculty understanding, direction and support. Changes in teacher education will come only to the extent that faculty concepts of their own roles change in ways which provide both the direction and the force required to build the new teacher education.

The Use of CBTE in an International Setting Exporting CBTE Model.

The first problem that comes to mind in exporting any CBTE model is the problem of cross-cultural differences.[29] Many of the needs to which the CBTE model addresses itself in the United States at first appear not to have relevancy in another setting. First, being built on the taxonomy of learning, CBTE requires the student to move through all levels of learning from knowledge and rote memorization to analysis, evaluation, and synthesis. Historically, some school systems have required students to function primarily at the knowledge and recall level through much of their elementary, secondary, and

sometimes collegiate preparation. Second, the CBTE model requires a certain level of sophistication and media technology. Teachers and students must be able to use a variety of learning methods; they must be willing to move away from the strict concept of lectures. Third, the CBTE model requires teachers to become integral parts of the learning process; and to do this, they need to receive inservice education both for the understanding and writing of objectives and using evaluation for diagnostic purposes in order to match objectives to teaching strategies and testing. Fourth, exporting CBTE is uniquely an American invention. It was built on learning theory developed initially in Russia, enhanced in staff structures using the open school concept poineered in Britain and uses multi-team and multi-media approaches as an integral part of curriculum development throughout the world.

In exporting CBTE, the norms we must attempt to overcome are basically norms inherited from a nineteenth century concept of education in which the student is a passive participant where very little exploration, creativity, or hard analysis is required. The biggest problem in creating change is getting the faculty to up-date themsevles. Finally, it seems imperative that UNESCO establish a major teacher center or resource collection bureau where scholars throughout the world can begin to share the problems, promises, successes and failures they have had in developing new models in education. To this time, we have seen school after school "re-invent the wheel". Or we have seen superficial discussion of ideas and materials. What we would propose is that the greatest service UNESCO can perform is to establish a center where modules could be collected and scrutinized, where scholars could begin to run process evaluation on each other's materials, where we would meet specifically to share ways of incorporating cross-cultural materials in our own curriculum, and where we could benefit from each other's mistakes. What we are suggesting is world-wide cooperation in an attempt to use technology and learning of the 20th century in preparation for 21st. It would seem imperative that

one collection of ideas and experiences be formalized so we may all understand and have a variety of options open to us based upon sophisticated and realistic approaches to learning.

Conclusions.

On the basis of complete data analysis, some basic conclusions can be reported:

1. It is possible to synthesize the content of a teacher education program into a set of identifying competencies intended to be developed by the program and then measure the program's competencies through the assessment of student teacher behavior, with some degree of confidence. Such measurement provides information about the adequacy of the program as well as the competency of the students graduating from it.

2. University of Toledo student teachers scored well above the midpoint on the high inference assessment instrument (TPAI) which indicated that the program competencies established for them were being demonstrated in student teaching.

3. Because the scoring procedures for the low inference instrument (COKER or GATE) rely on comparisons with other teacher groups (scaled scores are not used), The University of Toledo student teachers showed remarkable consistency in their teaching performance across all competencies measured. In essence, their competency scores were more like those of experienced teachers (one or more years of teaching) than the scores obtained for student teachers from other colleges.

4. A factor analysis of the high and low-inference instrument data supported the general contention that there were discrete, underlying traits or constructs of teaching. The 49 competencies did not collapse into a single, omnibus factor.

5. When the same competency was measured on both the high and low inference instruments there was a lack of correlation between the scores obtained. The situation likely reflects a difference in measurement approaches, although the measurement of teacher competency should not be instrument-dependent. More research is being conducted concerning this finding, with new data available since the pilot study was completed.

6. Information about teacher competencies can be obtained for student teachers as a group and individually. Comparisons between individuals can be made for specific competencies or by student teacher groups on specific competencies. Profiles of competencies of individuals can be used for diagnostic purposes. Individual competency successes and difficulties can be identified and provided to student teachers during their student teaching as cumulative means of student teaching evaluation. The evaluation of student teaching can become more objective and predictive of teacher success using high and low inference measures.

7. The information obtained for groups of student teachers can be used for purposes of standardizing the mean scores for University of Toledo student teachers and to note the deviations from the means in terms of specific competencies. From such information, questions can be raised concerning the effectiveness of the teacher education program, where it can be improved, and what needs to be done to improve it.

8. The type of competency study and assessment described in this paper can be extended to teachers in regular teaching positions as a follow up of an institution's graduates. Further, achievement and long-term gain to teacher competency measures, which is not possible in a short term student teaching situation.

It is obvious that the more we understand about teacher performance, the better the skills of pedagogy can be developed to improve that performance. A useful research/evaluation procedure has been pioneered at The University of Toledo with its unique competency-based teacher education program. The dual efforts of innovative program and research/evaluation development have resulted in the production of decidedly better, more competent teachers which is basic to educational improvement worldwide.

The entire effort by the model directors in competency-based teacher education has been to proclaim, delineate and prescribe change in teacher education. Society has changed the goals of education but most educational institutions, especially colleges and schools of education, appear uninformed of the new goals. The needs and natures of learners have changed, but our schools, where the graduates of teacher educastion institutions are placed, are still organized and operated for pupils of an earlier, simple time. Curriculums have changed but have not kept pace with social, economic, cultural and technological changes. That educators have not kept up with societal change is not unusual or unexpected. It is not a simple matter to keep educational goals and practices consistent with society's needs, but saying this does not lessen the need to reduce a major aspect of societal strain and to achieve the development of a more appropriate fit between society and education. This is a crucial objective of a modern society. This is the task to which the model builders have addressed themselves in teacher education. We are fundamentally concerned with teacher education because it is here that educational forces seem most resistant to change, but it is also the place where the greatest educational breakthroughs can be realized and exploited.

The evolving, changing, regenerative nature of teacher education has been suggested. Teacher education programs of the future must

have the built-in capacity to reform, renew and change themselves. The method of program development called "competency-based teacher education" can make possible the consideration of teacher education as evolving, changing, and regenerating. In all of the model efforts, our concern for educational change has been our central guiding principle. We want to make it clear that change is contemplated for both the teacher education process and its products. If the process can be transformed, we expect to realize very different products. If the behavorial objectives established by and for our products are achieved, we expect teacher education operations of a vastly different nature. We hope you join us in the final, unequivocal conviction that the education of teachers as it now exists must be fundamentally changed.

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